



Lock & Dam 22

(Saverton, Missouri)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Construction: 1934-1939

General Contractors:

Lock: Joseph Meltzer, Inc., New York, N.Y.

Dam: Massman Construction Co., Kansas City, Mo.

Congressional District: MO-9; IL-17

Description

Lock and Dam 22 is 301.2 miles above the confluence of the Mississippi and Ohio rivers. Bluffs rise more than 200 feet above the river west of the lock; the valley is quite wide east of the complex.

The lock dimensions are 110 feet wide by 600 feet long with additional provisions for an auxiliary lock.

The maximum lift is 10.5 feet with an average lift of 7.5 feet. It takes approximately seven minutes to fill or empty the lock chamber.

The movable dam has nine non-submersible Tainter gates (25 feet high by 60 feet long), one submersible Tainter gate (25 feet high by 60 feet long), and three submersible roller gates (25 feet high by 100 feet long). Completing the dam system are two transition dikes and a submersible earth and sand-filled dike. It takes seven hours for water to travel from Lock and Dam 21, in Quincy, Illinois, to Lock and Dam 22.

History/Significance

Construction on Lock 22 began Dec. 28, 1933, and was completed in May 1935. Construction on Dam 22 began Sept. 21, 1936, and was completed in July 1938. The structure was placed in operation on July 22, 1938. The lock opened in 1939.

Two sites were investigated for the location of Lock and Dam 22. The first site at 5.3 miles downstream of Hannibal proved to have unfavorable sub-soil conditions. Thus, the existing site 7.8 miles downstream of Hannibal was selected.

It was on the submersible roller gates at Dam 22 that the Rock Island District introduced the Poiree dam trestles to mitigate scour problems. The trestles were subsequently used as a retrofit solution on other Project dams. The District also incorporated an experimental design for a submersible roller gate with end shields and introduced a new type of non-submersible, truss-type Tainter gate. It was also on this dam's submersible roller gates that the St. Paul District Hydraulic Laboratory conducted tests that led to the design of stilling basins for roller gates.

Extreme hot weather during the summer 1934 caused construction delays. A record high 116°F was recorded on July 20, 1934. However, winter temperatures were mild for the most part. Favorable river stages existed during the entire construction period. Rainfall was considerably below normal due to the drought during summer 1934. From Nov. 30 to Dec. 10, 1934, construction progress was practically stopped due to accidental flooding of the cofferdam



U.S. ARMY CORPS OF ENGINEERS – ROCK ISLAND DISTRICT

CLOCK TOWER BUILDING, P.O. BOX 2004, ROCK ISLAND, IL 61204-2004
Corporate Communications Office, (309) 794-5274, www.mvr.usace.army.mil

area. The average daily number of men employed by the contractor on the lock was 327 with a maximum of 959 on Oct. 31, 1934. Due to high river stages in April 1937, the dam construction was delayed for six days.

The lock and dam elements of the complex were completed at a cost of \$3,943,000.

Annual Tonnage (20-Year Historical)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1992	38,263,921	1997	32,296,553	2002	37,567,046	2007	28,908,447
1993	25,188,986	1998	33,648,345	2003	32,229,405	2008	22,264,425
1994	29,410,587	1999	38,074,304	2004	26,755,587	2009	26,067,186
1995	36,025,581	2000	36,812,642	2005	27,371,325	2010	23,643,750
1996	34,828,598	2001	33,336,062	2006	29,789,804	2011	22,499,059

Commodity Tonnage & Lockages (2011)

Coal	1,526,678	<u>Subtotals:</u>	Grain	12,005,710
Petroleum	238,830		Steel	94,200
Chemicals	3,521,937	<u>Lockages:</u>	Commercial Boats:	1,779
Crude Materials	2,383,289		Recreation Boats:	333
Manufactured Goods	1,315,067		Light Boats:	102
Farm Products	13,440,692		Other Boats:	65
Manufactured Machinery	54,055		Total Boats:	2,279
Waste Material	980		Total Cuts:	3,488
Containers & Pallets	1,600			
Unknown	15,931			

The 9-Foot Channel Project

Lock and Dam 22 is one of 29 locks and dams on the Upper Mississippi River that provide a water stairway of travel for commercial and recreational traffic from Minneapolis to the Gulf of Mexico.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930s and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri and Wisconsin.

The maintenance needs of the aging infrastructure are increasing at a rate much greater than the operations and maintenance funding provided for the system which adversely affects reliability of the system. Long-established programs for preventive maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

Additionally, the system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

There are more than 580 manufacturing facilities, terminals, grain elevators, and docks that ship and receive tonnage in the Upper Mississippi River basin. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 1,050 large semi-trucks (26,250 cargo tons, 875,000 bushels, or 17,325,000 gallons). Annually, the 9-foot project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

UPDATE: October 2012

U.S. ARMY CORPS OF ENGINEERS – ROCK ISLAND DISTRICT
 CLOCK TOWER BUILDING, P.O. BOX 2004, ROCK ISLAND, IL 61204-2004
 Corporate Communications Office, (309) 794-5274, www.mvr.usace.army.mil